

FURTHER  
RESEARCHES AND OBSERVATIONS  
ON  
THE TWO PRINCIPAL FORMS  
OF  
ANCIENT BRITISH SKULLS.



WITH TABLES OF MEASUREMENTS.

BY  
JOHN THURNAM, M.D., F.S.A.

FROM THE MEMOIRS OF THE ANTHROPOLOGICAL SOCIETY OF LONDON, VOL. III.

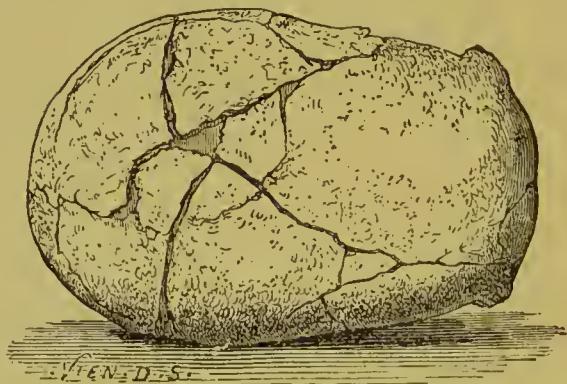
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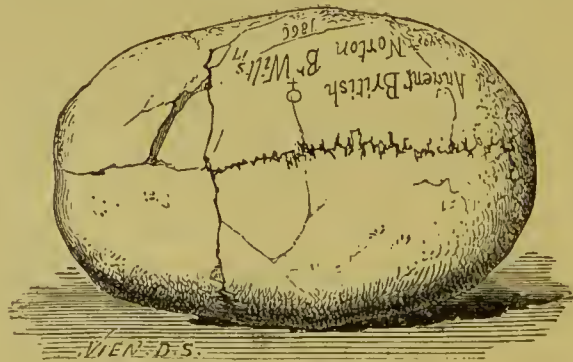





1.—Female Skull (235), from a Long Barrow at Tilshead (Old Ditch), South Wilts.—(B-I, '68.)



2.—Male Skull (233), from a Long Barrow at Figheldean, South Wilts.—(B-I, '66.)



3.—Female Skull (251), from a Long Barrow at Norton Bavant, South Wilts.—(B-I, '64.)

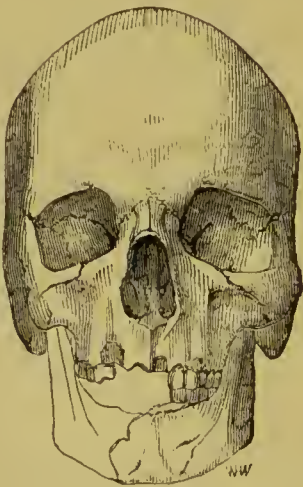


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Lateral view.



Frontal view.



Vertical view.

Synostotic Male Skull (210) from Bowsbarrow, South Wilts.—(B-I, '67.)











II.—MEASUREMENTS OF 70 ANCIENT BRITISH SKULLS, FROM ROUND BARROWS; ARRANGED IN THE ASCENDING ORDER OF THE BREADTH-INDEX.

DERIVATION OF SKULLS.									
Probable Age.	Cubic Capacity.	Circumference.	III.		IV.		V.		VI.
			Length.	Breadth.	Length.	Breadth.	Length.	Breadth.	
56 Skulls supposed to be of Men.									
Pl. 6	30	98	21.1	7.5	5.6p	6	4.9	5.1	74
Artras, East Riding, Yorkshire.									
Kennet Hill, Wiltshire.	Pl. 11	60	21.7	7.7	5.7i	6.2	5	5.2	80
Monks Dale, Derbyshire.	180 p	20	20.7	7.3	5.4i	5.5		74	75
Acklam, East Riding, Yorkshire.	Pl. 31	50	21.6	7.7	5.8p	5.7	4.9	5.2	75
Morgan's Hill, Wiltshire.	Pl. 32	70	21.4	7.6	5.7p	5.7	5.2	5.4	75
Three Lowes, Staffordshire.	68 p	70	20.8	7.4	5.6p		4.7	5.6	75
Castern, Staffordshire.	85 p	30	21.5	7.4	5.6p	5.8	4.9	5.6	75
Wagon Lowes, Derbyshire.	207 p.	25	21.2	7.4	5.8p	5.2			78
Ramscroft, Staffordshire.	151 c	25	21.8	7.6	5.8p				68
Litt's Lowes, Derbyshire.	22 p	30	20.8	7.5	5.7p		4.8	5.7	76
Cross Lowes,	40 p	70	21.6	7.6	5.8i				76
End Lowes,	Pl. 13	40	21.2	7.2	5.6p	5.6	5.4	5.2	77
Bincombe, Dorsetshire.	Pl. 57	65	21	7.2	5.6i	5.3	5	5.2	77
Gotham, Derbyshire.	100 p	30	20.5	7.2	5.6p	5.7	5		79
Nether Lowes,	155 p	70	21.5	7.5	5.8p				
Staker Hill,	193 p	60	20.2	7	5.4p	5.6	4.4	5.2	80
Stonehenge, Wiltshire.	99	60	22.3	7.7	6	5.6			77
Caedegai, Derbyshire.	Pl. 23	40	21.2	7.4	5.8p	5.7	4.6		77
Cross Lowes, Derbyshire.	39 p	60	20.3	7	5.5i	5.4	4.6	5.4	77
House Lowes,	117 c	45	22.6	7.9	6.2p	5.7	5.3		78
Day Top,	Pl. 60	60	21.8	7.4	5.9p	5.4	4.4	5.4	81
Alldon Moor,	Pl. 1	50	20.9	7.3	5.9p	5.5	5.1	5.5	80
Laddon Field, Derbyshire.	237	40	20.9	7.2	5.8p	5.6	5.1	5.5	80
Arslay Hay,	Pl. 2	55	21.2	7.4	6 p	5.6	4.7	5.4	81
Green Gate Hill, N. Riding, Yorkshire.	Pl. 3	40	21	7.1	5.8i	5.3	4.4	5.2	81
Newbigging, Orkney.	Pl. 21	60	21.5	7.5	6.1p	5.8	4.8	5.4	81
Lean Lowes, Derbyshire.	8 p	30	20.7	7.1	5.8p		4.4		81
ew Inns,	62 p	30	20.8	7	5.7p	5.5			78
onsal Dale,	190 p	45	21.4	7.4	6 p	5.7	4.9	5.9	81
uniper Green, Mid Lothian.	Pl. 15	50	20.3	7	5.8i	5.1	4.6		82
reen Lowes, Derbyshire.	Pl. 41	35	21.5	7.5	6.2i	6	4.7		82
oundway, Wiltshire.	Pl. 43	50	22.5	7.8	6.4p	5.3	5.6	5.7	82
allard Down, Dorsetshire.	Pl. 45	14	19.6	6.7	5.5p	5.4	4.3	4.7	82
untlestone, Derbyshire.	108 p	60	20.8	7.2	5.9p	5.5	5		82
mentill Moor,	234 p	25	21.3	7.2	5.9p	5.4	4.3		82
etton Hill, Wiltshire.	Pl. 42	75	21.7	7.4	6.2p	5.7	4.7	5.3	83
etton Hill, Staffordshire.	Pl. 12	60	21.5	7.4	6.2p	5.5	4.8	5.4	83
ford, Wiltshire.	Pl. 14	40	20	6.8	5.7p	5.1	4.4	5.3	83
oston, Derbyshire.	106 p	70	21	7.2	6 p	5.3	4.8	5.8	84
onehenge, Wiltshire.	98	70	21.5	7.2	6.1i	5.8			84
utton Hill, Staffordshire.	77 p	60	20.6	7.3	6.2p	5.7	5		84
ross Lowes, Derbyshire.	37 p	25	21.1	7.1	6.1p	6	4.6	5.4	84
onsal Dale,	182 p	70	21.5	7.3	6.2i	5.2	4.4	5.7	83
smurde, Banffshire.	Pl. 16	60	21.5	7.3	6.2i	5.2	4.4	5.7	83
etton Hill, Staffordshire.	Pl. 34	40	22	7	6 i	5.6	4.9		85
isthorpe, East Riding, Yorkshire.	Pl. 52	70	21.2	7.4	6.3i	5.8	4.7	5.7	85
sson, Northumberland.	Pl. 54	70	21.2	7.1	6.1p	5.3	4.8	5.1	85
ncient Knoll, Derbyshire.	Pl. 40	20	20.7	7	6 p	5.7	4.3	5.6	85
itter Hill,	Pl. 53	70	20.4	6.8	5.9p	5.7	4.5	5.6	86
stern, Staffordshire.	84 p	40	21.7	7.5	6.5i	5.9	4.8	5.6	86
well, Dorsetshire.	121	70	22	7.4	6.5i		5.2	6.2	87
stern, Staffordshire.	73	40	20.1	7	6.1i		5.2	6.2	87
lley Lowes, Derbyshire.	49 p	65	21.3	7.2	6.3p		4.8		87
onsal Dale,	187 p	40	20.8	6.9	6.1i	5.6	4.5	5.8	88
Average in Inches English.									
96	21.1	536	7.28	5.9	5.6	4.75	5.45	81	77
14 Skulls supposed to be of Women.									
177 p	17	20.8	7.4	5.5p	5.4	4.6			74
ew Lowes, Derbyshire.	161 p	30	19.7	5.4p	5.4				77
iddleton Moor,	Pl. 35	40	20	5.6p	5.5	4.3	5.1		77
lley Hill,	168 c	30	19.6	5.4p	5.4		5.1		78
ay Top,	181 p	30	20.7	5.7p	5.7				78
ake Lowes, Staffordshire.	112 p	17	20.2	5.6p	5.1	4.3			80
lley Lowes, Derbyshire.	48 p	50	20.6	5.8i		4.9			82
aree Lowes, Staffordshire.	69 p	35	19.9	5.7i	5.5	4.3	5.5		83
usden Lowes, Derbyshire.	128 p	25	19.9	5.7p	5.2	4.3			83
ay Top,	186 p	60	6.8	5.8p	5.3				83
nerill Moor,	231 p	20	6.5	5.4p	5.4	4	5.1		83
aker Hill,	192 p	30	6.9	5.8p	5	4			84
alley Lowes,	11 p	70	6.9	5.8p					85
ay Top,	181 p	30	6.7	6 p	5.4				89





Averages in Inches English.									
Second Series, 1866.									
19 Skulls chiefly of Men.									
Average in C. Centim. & Linear Millimetres.									
Average in Inches English.									
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*Further Researches and Observations on the Two Principal Forms of Ancient British Skulls.* By JOHN THURNAM, M.D., F.S.A., F.A.S.L.

IN the first volume of the *Memoirs of the Anthropological Society*,\* I have described, at length, two types of skulls from the grave-mounds of the ancient Britons, which are strongly contrasted the one from the other. The first, and, as I believe, the earliest in time, are very remarkable for their "long-drawn-out" (*dolichocephalic*) and narrow (*stenocephalic*) form; and have hitherto been principally found in the long barrows of the south-west of England, and especially in those of the counties of Wilts and Gloucester. The second are characterised by their more or less broad and short form, which brings them within the *brachycephalic* and *eurycephalic* categories of technical craniologists; and are yielded by the circular barrows of the pre-Roman period, which are spread extensively over nearly the whole of this island.

ARCHÆOLOGICAL INFERENCES.

The *long barrows*, in accordance with the geological character of the districts in which they occur, are either simple tumuli of earth, chalk, rubble, and flints, as in South Wilts and Dorsetshire; or they contain more or less elaborately built-up chambers, galleries, or cists of large stones, as in North Wilts and Gloucestershire. Whether, however, they enclose megalithic chambers or not, the sepulchral deposits are almost invariably found at or near the broad and high end of the tumulus, which is generally directed towards the east. In no case have the primary interments yielded objects of metal, whether bronze or iron; but, in some instances, implements or weapons of bone

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\* "On the Two Principal Forms of Ancient British and Gaulish Skulls." (*Memoirs Anthropol. Soc.*, 1865, i, 120-168; 459-519. With Appendix of Tables and Plates.)



and flint, and especially well-chipped leaf-shaped arrow-heads; and also perhaps (as at Uley), axe-heads of flint and green stone, both polished, have been found in them.\* I therefore think we do not err in attributing this form of tumulus, as it occurs in this south-west part of England, to the *neolithic* age, and to a period when the burning of the dead, though not unknown, was not a received or favourite method of disposing of their remains.

The *round barrows*, whether simply conoid or bowl-shaped, or of the more elaborate bell and dish forms, are very much more numerous than the long barrows of the same districts. They much more frequently cover interments after cremation than by simple inhumation,—in the proportion indeed, of at least three of the former to one of the latter. As, however, the objects found with the burnt bones and with the entire skeletons in this class of barrows do not differ in character, but, in addition to implements and weapons of stone, including beautifully barbed arrow-heads of flint, not unfrequently comprise weapons and implements of bronze, and the finer and more decorated sorts of ancient British *factilia*—the so-called “drinking” and “incense cups”—we may safely conclude that all are of the same bronze age,† during which, in

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\* Many of the primary interments in the long barrows have yielded rude flakes, knives, and scrapers, as well as large globular nodules of flint, weighing from one to four pounds, which have obviously been utilised. (*Archæologia*, xxxviii, 416.) In one case, there was a sort of natural bludgeon of flint, from one end of which flakes had been detached. (*Mem. Anthropol. Soc.*, i, 142, fig. 7.) In three of the long barrows, one simple and two megalithic, the delicate, leaf-shaped arrow-heads referred to in the text have been met with. (*Proc. Soc. Ant.*, second series, iii, 168, 1865.)

† Objects of *iron* have only in very rare instances (and those reported are not always free from doubt), been found in the round barrows; yet, the people who raised these grave-mounds were no doubt really in possession of that metal, as well as *bronze*. Iron, however, was scarce, and its use probably very much restricted. This accords with the statement of Cæsar as to the Britons of his day,—“ferri exigua est copia; ære utuntur importato.” (*B. G.*, v, 12.) The age was strictly one of *bronze and iron transition*.

The archæological details as to the different forms of ancient British tumuli in the south-western counties of England, are given in papers, by the author of this Memoir, communicated to the Society of Antiquaries of London, in the years 1867 and 1868, for publication in the *Archæologia*.



this country, cremation, though not the exclusive, was the favourite method of disposal of the remains of the dead.

#### ANTHROPOLOGICAL INFERENCES.

The conclusion at which I arrived, in the memoir referred to, as to the strongly contrasted head-forms associated with the two classes of grave-mounds now briefly described, was that they are to be assigned to two distinct peoples. The brachycephalous skulls, of the round barrows and bronze age, appeared to me to be clearly attributable to the Belgic Britons of the time of Julius and of the ages immediately antecedent and subsequent; who, as we know, migrated to this island from Gaul. The dolichocephalous skulls, of the long barrows and stone age, I assigned, with at least equal confidence, to the most ancient inhabitants, who were conquered and displaced by the Belgic invaders, and are described by Cæsar, under the name of *Intiores Britanni*, as forming the aboriginal population.\* We are not without historical grounds for regarding this last population as of quite diverse origin from the former, and for regarding it as Iberian, or at least as owning a common parentage with the Iberians.

The general connexion of the two different skull-forms with two differing forms of tumulus, appeared to me sufficiently curious to be summed up in a convenient antithetic formula, thus:—"Long barrows, long skulls; round barrows, round or short skulls." At the same time, I was quite aware of the existence of apparent exceptions to this proposition, and was fully prepared for greater ones than had then been observed.

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\* "Britanniæ pars interior ab iis ineolitur, quos natos in insula ipsa memoria proditum dieunt. Maritima pars ab iis, qui prædæ ac belli inferendi causa ex Belgis transierant; qui omnes fere iis nominibus eivitatum appellantur, quibus orti ex eivitatibus eo pervenerunt, et bello illato ibi remanserunt atque agros colere cœperunt. . . . Ex his omnibus longe sunt humanissimi, qui Cantium ineolunt, quæ regio est maritima omnis, neque multum a Gallia differunt consuetudine. Interiores plerique frumenta non serunt, sed læte et earne vivunt, pellibusque sunt vestiti." (*B. G.*, v, 12, 14). Whilst it is seen that the Belgic tribes near the coast were comparatively civilised agriculturists, the people of the interior were much less cultivated and still in the hunting and pastoral condition.

As to the round barrows, I expressly remarked that it was *evident that, unless the earlier race had been suddenly exterminated by the succeeding one, a mixture of interments and of the two types was to be expected.\**

#### OBJECTIONS MET.

It is only for the first part of my proposition, viz.—*Long barrows, long skulls*, that I lay any special claim as a discoverer or original observer. I believe I have established, for this part of England, the connexion, apparently uniform, between long barrows and dolichocephalic skulls. I have now opened more than twenty of those remarkable grave-mounds, and not one of them has yet yielded, in the primary place of interment, a brachycephalic skull. As to the second part of the proposition, viz.—*Round barrows, round skulls*, I claim little more than to have formulated, not so much my own original observations, which under this head are not very extensive, but rather the common experience of all British craniologists; among whom I reckon Prof. D. D. Wilson, the late Mr. Bateman, Mr. G. Tate, my friend Mr. Greenwell, and my colleague in the production of *Crania Britannica*, Dr. J. Barnard Davis. All of these hold that the prevailing ancient British skull-type, and consequently that of the round barrows, is brachycephalous.

Objections to this, the second proposition of my formula, have recently been adduced, founded on nine imperfect skulls, received from round barrows in Dorsetshire, and presented to the Anthropological Society by Mr. Shipp of Blandford.† Even if all these skulls were relevant to the question, it may be safely asserted that a much larger amount of evidence than they comprise would be required to invalidate the proposition before us, in the sense in which it is held. I have particularly examined and measured these nine skulls, and my measurements do not differ materially from those by Mr. C. C. Blake, though I obtain from them an average breadth-index of  $\cdot 72$ , as against

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\* *Mem. Anthropol. Soc.*, i, 128. Separate Copy, p. 9. I also referred to the probable "production of a hybrid population with a cranial form intermediate to the two others". *Ibid.*, i, 150. Separate Copy, p. 31.

† *Anthropol. Review*, 1866, iv, 398.

one of  $\cdot 71$ .\* There is, however, no doubt that this small series is much more dolichocephalous than any yet published as from round barrows, and that the mean breadth-index approximates closely to that of the true long-barrow skulls. The two first alone (Nos. 1 and 2), are of the usual round barrow type, and have a breadth-index of  $\cdot 81$  and  $\cdot 80$ . The other seven vary from  $\cdot 67$  to  $\cdot 74$  (average  $\cdot 70^6$ ), which are dolichocephalous and long-barrow breadth-indices.

Upon looking at the history of these skulls, as deducible from Mr. Shipp's memorandum, from a letter with which he has favoured me, as well as from the narrative of the opening of most of the barrows in which they were found, given in Mr. Warne's recent work, *The Celtic Tumuli of Dorset*, I see great reason to doubt whether, of the entire number, more than one was derived from a really *primary interment* in a circular barrow of the British period. Four or five are, indeed, avowedly from "superficial" or *secondary* deposits. Another (No. 8), is from a cemetery of the Roman period at Spettisbury,† and from no round barrow at all. Another (No. 9), is considerably affected by posthumous lateral flattening. Two others (Nos. 4 and 5), are from an interment, the character of which, as an ancient British barrow, may be doubted: consisting as it did of a slight "swelling of the turf on Kingston Down, barely twelve inches above the surrounding surface", with a layer of flints covering seven skeletons lying side by side and east and west, in a shallow grave one foot deep.‡ Both these skulls have a quite recent appearance, and retain decided traces of the ani-

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\* There are really *eleven* skulls and calvaria, and *ten* (excluding "No. 10"), capable of being measured. The last, (Nos. 11 and 12 of Mr. Shipp's Memorandum, forming one specimen) has a breadth-index of  $\cdot 73$ , and its addition to the series does not affect the mean *breadth-index*, which I still make  $\cdot 72$ . The mean *height-index* of the ten skulls is  $\cdot 74$ .

† See *Proc. Soc. Antiq.*, iv, 188.

‡ Warne, *Celtic Tumuli of Dorset* (Part 2); *Kingston Down Tumulus*, *Twelve*, p. 11. In my observations in the text, I assume the genuineness of these nine or ten skulls. It must not be forgotten, however, that they bear no labels inscribed at the time of their discovery; and that when presented to the Anthropological Society, they had been in Mr. Shipp's possession for a period of twenty years. The circumstances are not favourable to their correct identification; though this is certainly possible.



mal oil of the bones, such as I have never seen in truly ancient British skulls.

As regards skulls from secondary interments, they require to be entirely eliminated from the general inquiry, as we can seldom say to what period they belong. Many, perhaps the majority, are Anglo-Saxon, and some may be of the Roman period. On the other hand, it is quite possible that some are pre-Roman and ancient British; but proof of this is certainly not afforded in the meagre details we have of their exhumation in this instance.

I am, however, quite prepared for the announcement that, in some parts of England, there are round barrows, the primary interments in which yield elongate skulls of the long barrow type. And, though no series of such skulls has yet been produced, I should by no means be surprised to meet with them in some of those districts in which, it may be from local causes, the immigrant brachycephalous race did not at once extend itself; though it may have communicated its fashion of erecting round rather than long barrows over the dead. Such a district may possibly have been Dorsetshire. Wiltshire was an important centre of the Belgæ; but the neighbouring Dorsetshire, as I have shown elsewhere, and without reference to the present inquiry, has no claim to be considered as settled by the Belgic invaders.\* A comparison of the objects found in the circular barrows of the two counties conclusively shows that the Durotriges were a much poorer and less cultivated people than their neighbours the Belgæ. It is quite possible, therefore, that they may turn out to have been a tribe of the primitive dolichocephali, as we may conclude, on historical grounds, the Silures and other western tribes were, even in the Roman period.

I here freely admit that Mr. Greenwell's excavations, during the autumns of 1866 and 1867, seem to show that in some of the circular barrows of the North and East Ridings of Yorkshire, the primary interments were really those of a dolichoceph-

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\* *Crania Britannica* (Decade 5). Description of a skull from Ballard Down, Dorset. (Pl. 15, xxxiii, p. 1, 4.)

phalic people not distinguishable from those of the long barrows; whilst the secondary interments, though evidently ancient British, were still more certainly brachycephalic.\* These facts, though for this particular part of England, opposed to the naked proposition, "round barrows, round skulls", are still in favour of the more important inference as to the presence of two altogether distinct races in Britain in pre-Roman times; one of whom, the earliest in order of time, was dolichocephalic, and the other brachycephalic. This very part of England, North-East Yorkshire, is indeed one in which it is highly probable that the two races were brought into contact without at once becoming mixed. The "Wolds" of the East Riding formed almost certainly the boundary between the Parisii of the southern part of the East Riding and the Brigantes of the rest of the present Yorkshire. There are also good grounds for believing that the former were a more civilised tribe than the latter, and that they were immigrants of Belgic or Gaulish origin; whilst the Brigantes probably belonged to the tribes who are called aborigines of the interior by Cæsar.†

#### FURTHER EVIDENCE.

My present principal object, however, is that of reviewing the whole subject, in the light of the additional researches and more extended data, acquired since my former papers were written.

#### ROUND SKULLS FROM THE ROUND BARROWS.

I will commence with the minor and less important proposition of the two; viz., the connexion of brachycephalous skulls

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\* This I take from Mr. Greenwell's report, and from letters with which he has favoured me; not having had an opportunity of carefully examining the skulls themselves, the measurements of which have not yet been published.

† This point was worked out many years ago, quite independently of the question now under discussion. See "Description of Ancient British Skull from Arras E. R. Yorkshire," *Cran. Brit.*, Plates 6 and 7, XII, p. 5, decade 2, 1857. The skull here figured and described has a breadth-index of '74, and is, therefore, not brachycephalic. It has, however, no relations with the long-barrow skulls, as its macrognathic character sufficiently declares. Like one or two other skulls in my collection, it is an exceptional and aberrant instance of the brachycephalous British skull form.

with the circular British barrows; or *Round barrows, round skulls*.

As to this, I relied chiefly on the data brought together in the descriptions, plates, and tables of measurements, in *Crania Britannica*. The large Table II of that work, with measurements of one hundred and eleven ancient British skulls,\* about half of which may be from round barrows, was not completed by my former colleague, when my former memoir was written. The data in that table, as in the entire work, were brought together by my colleague and myself, without any reference to the views to be deduced from them; but solely on the grounds of the due authentication of the skulls, and of their fitness, as regards preservation, for being engraved, described, and measured.

In the complete work, *Crania Britannica*, there are descriptions and plates of twenty-five skulls from round barrows in all parts of Great Britain;† one only of this number being regarded as the skull of a woman. These twenty-five skulls have breadth-indices which range between  $\cdot 74$  and  $\cdot 86$ , and have a mean of  $\cdot 80^5$ .

SKULLS FROM ROUND BARROWS IN ALL PARTS OF GREAT BRITAIN, ENGRAVED AND DESCRIBED IN "*CRANIA BRITANNICA*."—*BREADTH INDEX*.

No. of Skulls.		Range.		Mean.
25.	...	$\cdot 74$ to $\cdot 86$ .	...	$\cdot 80^5$ .

Nine of the twenty-five have a breadth-index of less than  $\cdot 80$ ; four being oval or orthocephalic ( $\cdot 74$ - $\cdot 76$ ), and five sub-brachycephalic ( $\cdot 77$ - $\cdot 79$ ); sixteen are brachycephalic ( $\cdot 80$ - $\cdot 86$ ). *Not one skull is, properly-speaking, dolichocephalic.*

In Table II of *Crania Britannica*, as already pointed out, the measurements of a much larger series of skulls from round barrows are to be found. It will be desirable to exclude those

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\* *Cran. Brit.*, Table II, p. 242-245.

† *Cran. Brit.* Table I, p. 240-241. The Table comprises thirty-five skulls; but of these, two are from Ireland, five from long barrows, two from graves not covered by barrows, and one is too defective to allow of the breadth-index being calculated. Twenty-one of the twenty-five round barrow-skulls, from this Table, were given in the second part of Table I of the paper, in the *Memoirs of the Anthropological Society*, i, 462.



from other parts of England, as to most of which the exact character of the tumulus or grave whence they were derived is not known, and to confine ourselves to those, from the circular barrows of Derbyshire and Staffordshire, which are preserved in the Bateman collection at Youlgrave. These are forty-one in number, of which twenty-eight are supposed to be the skulls of men and thirteen those of women.\* All the measurements of this series, I ought to state, are by Dr. Barnard Davis. The results tally remarkably with those obtained for the skulls figured and described in *Crania Britannica*. The forty-one skulls have breadth-indices which range from  $\cdot74$  to  $\cdot89$ , and have a mean of  $\cdot807$ . *Not one skull is properly speaking dolichocephalic.*

SKULLS FROM ROUND BARROWS IN DERBYSHIRE AND STAFFORDSHIRE IN  
THE BATEMAN COLLECTION —BREADTH-INDEX.

No. of Skulls.		Range.		Mean.
41.	...	$\cdot74$ to $\cdot89$ .	...	$\cdot807$

I have made numerous excavations in the round barrows of Wiltshire, with the hope of accumulating evidence as to the ancient British skull type of the bronze period in this part of the island. I have not, however, obtained from the primary interments in this class of tumuli, more than nine or ten skulls in a condition susceptible of measurement. Two of these are engraved and described in *Crania Britannica*, and are included in the above first category of twenty-five skulls. Six other skulls and calvaria from barrows near Stonehenge, with a seventh obtained by a friend from a barrow at Ulwell, Dorset, may be added to our data.† The breadth-index is respectively,

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\* I exclude 152 C (♀, breadth-index  $\cdot69$ ) as clearly secondary (*Ten Years' Diggings*, p. 161). I have compared the measurements in Table II, *Cran. Brit.*, with the details in Mr. Bateman's *Vestiges*, and *Ten Years' Diggings*, and especially with the *Descriptive List* of Skulls in the Appendix to the latter work.

† The measurements of four of these seven skulls are given in the second part of Table I in my former paper, *Mem. Anthropol. Soc.*, v. i, p. 462, Nos. 7, 10, 19, and 25. They are repeated in Table II, appended hereto. The three not in the table are Nos. 186, 265, and 266. The former is from an oval barrow, of the round-barrow period. Another skull (No. 254 of my collection), more recently obtained from a round barrow near Bratton, Wilts, is a remarkable

·78, ·79, ·80, ·81, ·84, ·85, and ·87; average, ·82. *Five of the seven are absolutely brachycephalic, and the other two are sub-brachycephalic, and closely approach that form.*

If we combine these three series into one, we obtain seventy skulls; fifty-six of which are presumably those of men, and fourteen of women. The principal measurements of the whole are given in Table II, appended hereto. They constitute the most important data yet obtained, or, we may unfortunately add, likely to be now obtained,\* for determining the breadth-index and general cranial type of ancient British skulls from the round barrows. The entire series, in reference to breadth-index, may be thus classed: the first column of figures gives the actual number, the second the per-centage.

Ancient British Round-Barrow Skulls.		Male.		Female.		Both Sexes.	
		Nos.	Proportions.	Nos.	Proportions.	Nos.	Proportions.
I. DOLICHOCEPHALI.	(· — ·70) ...	...	...	...	...	...	...
Sub-dolichocephali.	(·70—·73) ...	...	...	...	...	...	...
II. ORTHOCEPHALI.	(·74—·76) 11	11	·19 <sup>s</sup>	1	·07	12	·17
Sub-brachycephali.	(·77—·79) 10	10	·18	4	·29	14	·20
III. BRACHYCEPHALI.	(·80—·89) 35	35	·62 <sup>s</sup>	9	·64	44	·63
		56	1·00	14	1·00	70	1·00

It is seen that these round barrow skulls are essentially brachycephalous. Not a single skull is either dolichocephalic or sub-dolichocephalic, according to my method of classifying skulls by their breadth-index, and which is almost identical with that of Professor Welcker.† A few, 17 per cent. only,

instance of the effect of posthumous distortion, by which a cranium which was clearly sub-brachycephalous (c. ·78) has been converted into a pseudo-dolichocephalic one, having a breadth-index of ·70. In another specimen of a female skull (No. 261), being that from the primary interment in a circular barrow on Warminster Down, excavated May 18, 1867, the same strangely transforming effect of posthumous distortion is likewise very apparent. This skull, however, was by nature less brachycephalic.

\* The destruction of skulls and other human remains by the generality of barrow-diggers, and especially in Wiltshire at the beginning of this century, by the elder Cunnington and Sir R. C. Hoare, can hardly be too much deplored. The loss to anthropological science is irreparable.

Mr. L. O. Pike's criticism (*The English and their Origin*, p. 160), is met by the publication of Table II, the materials for which were formerly not accessible.

† *Mem. Anthropol. Soc.*, 1865, i, 462, 507, 510. "Two Principal Forms of Ancient British and Gaulish Skulls," (separate copy, pp. 52, 97, 100).

are ovoid or orthocephalic ; but so are a certain proportion of the skulls of the most brachycephalous peoples of modern times.

Our round-barrow ancient British skulls are as brachycephalous as those of modern Germans, Slavonians and Mongols. They occupy, indeed, as regards their mean breadth-index, almost exactly the same position as the skulls of those peoples. This is well seen, on reference to the extensive measurements by Professor Welcker, who gives  $\cdot 79$  as the mean breadth-index of the skulls of Little Russians and Finns ;  $\cdot 80$  as that of the South Germans, Great Russians and Magyars ; and  $\cdot 81$  as that of the Swiss, Slovaks, Calmucks and Tungusians.\*

I here confine myself, as regards the round barrow cranial type, to the inferences to be drawn from actual measurements of well authenticated skulls. It would be easy to confirm the view I have arrived at by the opinions and observations of various writers. Mr. Bateman for Derbyshire and Staffordshire, Mr. Greenwell and Mr. Tate for the Northumbrian dis-

Welcker, *Archiv für Anthrop.*, 1866, i, p. 135. Here is given a most valuable tabular classification of skulls of all peoples, according to their breadth-indices, from Prof. Welcker's measurements.

The question discussed in this and in the preceding papers has been obscured by that unfortunate system of nomenclature and classification, not yet obsolete, according to which all skulls, not brachycephalous, are regarded as dolichocephalous. Objects which are not *short* are not therefore of necessity *long* ; it being in the very nature of things that there should be intermediate forms, *neither long nor short*. We regard a skull as brachycephalic when it has a breadth-index of  $\cdot 80$  and upwards ; but in practice, no one can distinguish by the eye a skull with a breadth-index of  $\cdot 79$ , or even  $\cdot 78$ , from one of  $\cdot 80$ . The one is, by a slight fraction, only less brachycephalous than the other, though in some classifications the one would stand for a dolichocephalic, the other for a brachycephalic skull. It is scarcely possible to exclude from the mind the idea of *oval*, *mesaticephalic* or *orthocephalic* skull-forms, equally removed from the long and from the short. Nature presents to us all three, the one gliding into the other, though within defined limits, by scarcely perceptible gradations. The classification of races according to the form of the skull, has been laid open to just censure by the continued use, notwithstanding the objections of Welcker, Broca and myself, of the dichotomous system of Retzius. "The very terms," says an acute critic, "in which the cephalic index is described, proclaim it most arbitrary and conventional ; since a mere ideal line separates the round from the long skulls." Crawford, *Trans. Ethnol. Soc.*, vol. vi, p. 129.

\* *Archiv für Anthrop.*, 1866, i, pp. 135, 142, etc.



tricts, Dr. D. Wilson for the Lowlands of Scotland, Mr. J. R. Oliver for the Islo of Man,\* and Dr. J. Barnard Davis for Britain in general, all in one form or other ascribe a brachycephalous skull type to the ancient Britons of the pre-Roman bronze period; and, consequently, to the people by whom the round barrows were erected.

#### LONG SKULLS FROM THE LONG BARROWS.

We may now turn to the primary and more important proposition, namely, the connection of long or dolichocephalic skulls with the large barrows of elongate form; or *Long barrows*, *long skulls*.

Twelve years ago, when I commenced my researches in the long barrows of Gloucester and Wilts, by reopening, in conjunction with Mr. E. A. Freeman, that at Uley, in the former county, the only authentic skulls from this description of tumulus in the south-west of England, were two in the Museum of Guy's Hospital, obtained thirty years previously at the first opening of this remarkable chambered barrow.† Since that time, I have lost no opportunity of suggesting and aiding in the exploration of this interesting class of tumuli; and skulls have successively been obtained, by myself or friends, from those of Littleton Drew, West Kennet, Rodmarton, Nympsfield, Charlton Abbots, and Oldbury, all of them situated either in North Wiltshire or in Gloucestershire.‡ The skulls from

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\* Since this paper was read, I have been informed by Mr. J. R. Oliver, Hon. Sec. of the Manx Society, that he has opened thirteen tumuli of the round form, that the crania found in the central chambers were of the brachycephalic type; and that the skeletons measured 5 feet 10 inches to 6 feet, or even more. In the few long barrows he had opened, which contained skeletons, the crania were dolichocephalic.

† I have described both these skulls; of the one, of which there is a full-sized lithographic plate, in *Crania Britannica* (pl. 5, xxiv); the other, that of a girl of twelve or fourteen (rather than "nine or ten") in *Natural History Review*, April, 1865, v, 263 "On Synostosis of the Cranial Bones," etc., (separate copies, p. 24).

‡ These chambered tumuli and the skulls derived from them are described in *Crania Britannica*, pl. 24, xxv; pl. 50, xxvi; pl. 59, xxvii; and *Memoirs Anthropol. Soc.*, i, 131, 473, 474; where references to the more detailed archaeological memoirs in regard to them will be found.

these megalithic long barrows are forty in number, twenty-seven being presumably those of men, and thirteen of women. The principal measurements of all are given in Table I, appended to this paper, from which it appears that not a single skull is brachycephalic, and that scarcely any deviate materially from the narrow elongate type. The breadth-index of the forty skulls ranges from  $\cdot 67$  to  $\cdot 75$  (in one instance only  $\cdot 77$ ); the average breadth-index is  $\cdot 71^5$ .

SKULLS FROM CHAMBERED LONG BARROWS IN GLOUCESTERSHIRE AND NORTH WILTS.—BREADTH-INDEX.

No. of Skulls.		Range.		Mean.
40.	...	$\cdot 67$ to $\cdot 77$ .	...	$\cdot 71^5$ .

In South Wilts, on Salisbury Plain, as on other parts of the chalk downs of the south of England, destitute of stone fit for the construction of chambers, long barrows are found similar in external form to the chambered ones of North Wilts and Gloucestershire. Some of these were explored early in this century by Sir R. C. Hoare and Mr. Cunnington, and were found to cover interments of entire skeletons under the broad and high, generally the east, end of the barrow; but in every instance without ornament, weapon, or other object of bronze or of any other metal. As, however, none of the skulls had been preserved, it was impossible to say what was their type; whether dolichocephalic, like those from the chambered long barrows of North Wilts and Gloucestershire; or brachycephalic, like those from the circular barrows so numerous on these downs and plains.

After many unsuccessful attempts at excavating a long barrow having the original interment intact, I succeeded, as narrated at length in my former paper, in meeting with one such at Winterbourne Stoke, and with another containing six skeletons in the same year, 1863, in the parish of Tilshead (East). In 1864, I re-opened the long barrow called Bowlsbury, and obtained from it four skulls and calvaria, left in it sixty years previously by Mr. Cunnington. In each instance the skulls from the primary interments were of the long narrow type, similar to those from the chambered barrows of North Wilts and Gloucester. None were brachycephalous. At the same

time, skulls obtained by other investigators from long barrows in Yorkshire, at Heslerton, Ebberston, and Dinnington, were also found to be remarkable for their dolichocephalic form.\* The constantly recurring long type of skulls in barrows of this peculiar elongate type, appeared to me fully to justify the inference of my first paper of *long barrows, long skulls*; whilst the still more important conclusion was arrived at and established, that *the earliest inhabitants of Britain of whom the sepulchral monuments remain to us were markedly dolichocephalic*.

These views, however, have had to stand the test of criticism, and objections to them have been made in certain quarters. The inference, moreover, was one of so much curiosity and importance, as to lead me to seek further opportunities for its verification or otherwise; and since the publication of my former papers I have, with this object, during the years 1865, 1866, and 1867, opened as many as fifteen other of these large grave-mounds; and in seven of the number have been rewarded by finding the primary interments. These have yielded seventeen skulls capable of being measured, the number obtained from each productive barrow varying from one to nine. All, without exception, bear out the views previously adopted. I am the more desirous of placing this additional evidence on record, as the long barrows within my reach, accessible to excavation,

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\* I might also cite the experience of Mr. Bateman for so-called chambered barrows in Staffordshire and Derbyshire; but the more I consider his not very clear descriptions, the more doubt I feel as to their being strictly analogous forms of tumuli. They were, however, regarded by him as such; and I at least think it probable that several of them were really the tombs of the earlier dolichocephalic people of the stone age, the type of whose barrows is clearly not the same in all parts of the British Islands, and still less in France and the Channel Isles. In Ireland and in Caithness, the chambered barrows, probably nearly coeval with the long chambered barrows of Gloucestershire and Wilts, are, generally speaking, circular. It is still to be observed, notwithstanding that the Derbyshire chambered barrows were generally found to have been rifled, and the primary and secondary interments mixed by the riflers, that the mean breadth-index of eight skulls from them, measured by Dr. J. B. Davis, does not exceed .72 (see *Cran. Brit.*, Table II, pp. 240, 245, and plate 33, xvi, p. 5). I exclude 141 c, with the extraordinary breadth-index of .92, as being posthumously distorted.



have now nearly all been explored. Altogether, there are twenty-seven skulls and calvaria in my collection from the primary interments of the unchambered long barrows of South Wiltshire,\* which are susceptible of measurement, twenty-one of which are probably those of men, and six those of women.

## SKULLS FROM SIMPLE LONG BARROWS IN SOUTH WILTSHIRE.

## BREADTH-INDEX.

No. of Skulls.		Range.		Mean.
27.	...	·63 to ·75.	...	·69.

These skulls are even more dolichocephalic than those from the more northern megalithic long barrows; the mean breadth-index of the one being ·69, and that of the other ·71. Geographically, the one class of barrows is separated from the other by the Vale of Pewsey and the Wansdyke; the boundaries, as may be presumed, between the two British tribes of Belgæ and Dobuni, the former immigrants, the latter, as is thought, primeval.

In general, there is a great conformity as to the breadth-index of the skulls from each barrow. Some are orthocephalous and others sub-dolichocephalous, but the range is of comparatively small extent, and the dolichocephaly of the skulls from each grave mound is marked and decisive. The following table shows this:—

## CHAMBERED LONG BARROWS OF GLOUCESTER &amp; NORTH WILTSHIRE.

	No. of Skulls.	Breadth-Index.	
		Range.	Mean.
Uley, Gloucester.	2	·71-·74	·72 <sup>s</sup>
Littleton-Drew, N. Wilts.	7	·68-·74	·71
West Kennet, „	4	·67-·73	·70
Nympsfield, Gloucestershire	2	·74-·75	·74
Rodmarton „	5	·71-·74	·73
Charlton Abbots „	17	·68-·77	·71
Oldbury, N. Wilts.	3	·68-·74	·71
	40	·67-·77	·71 <sup>s</sup>

## UNCHAMBERED LONG BARROWS OF SOUTH WILTSHIRE.

	No. of Skulls.	Breadth-Index.	
		Range.	Mean.
Winterbourne Stoke	1	·75	·75
Tilshead (East) ...	5	·68-·74	·71 <sup>s</sup>
Bowls Barrow ...	4	·65-·70	·67
Fyfield ...	1	·69	·69
Tilshead (Lodge) ...	2	·66-·68	·67
Figcheldean ...	1	·67	·67
Tilshead (Old Ditch)	1	·68	·68
Netheravon ...	1	·69	·69
Stonehenge (165) ...	2	70 <sup>s</sup> -·71	·71
Norton Bavant ...	9	·63-·73	·68 <sup>s</sup>
	27	·63-·75	·69

\* All these barrows are on Salisbury Plain, and from an area extending about twenty-five miles from east to west, and about fifteen miles from north to south. Several of the number are within sight of Stonehenge. In Table I,

If we combine the skulls from the two classes of long barrows into one series, we have altogether sixty-seven skulls, to compare with the seventy skulls from the round barrows; and the whole, when arranged according to the same principle as that adopted for that class of skulls (see p. 10), will stand as follows:—

Ancient British Long-Barrow Skulls.		Male.		Female		Both Sexes.	
		Nos.	Proportions.	Nos.	Proportions.	Nos.	Proportions.
I. DOLICHOCEPHALI.	} (.63-.70)	23	... .49	9	... .45	32	... .48
Sub-dolichocephali.	} (.71-.73)	18	... .38	5	... .25	23	... .34
II. ORTHOCEPHALI.	(.74-.76)	6	... .13	5	... .25	11	... .165
Sub-brachycephali.	} (.77-.79)	.	... .	1	... .05	1	... .015
III. BRACHYCEPHALI.	} (.80- )	.	... .	.	... .	.	... .
		47	1.00	20	1.00	67	1.00

A comparison of the two tables shows how greatly these long-barrow skulls differ from those from the round barrows. Among the latter is not a single dolichocephalous skull; among these not a single brachycephalous one. Upwards of four-fifths (82 per cent.) are, more or less, dolichocephalous (.67-.73); and nearly one-half (48 per cent.), typically, or absolutely so (.63-.70). A small proportion only (16.5 per cent.), are ovoid or orthocephalic; and only 1.5 per cent., represented by a single exceptional skull, is sub-brachycephalous, with a breadth-index of .77.\* The average breadth-index for the entire series is .71.

#### SECONDARY INTERMENTS.

That the long barrows, yielding dolichocephalic skulls in their primary interments, are earlier in time than the round

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the skulls from these unchambered mounds are distinguished from those from the chambered long barrows, by being marked as derived from *South Wilts*. There are some barrows of this class in North Wilts, but they are few in number, and have not afforded any crania.

\* Professor Vogt, whilst appearing to accept the main conclusions of my former paper, observes, as to Table II, that "among the long-heads, Thurman himself registers very decided short-heads as coming from long-barrows." (*Archiv für Anthropol.*, i, 38, *Anthrop. Rev.*, v, 347.) Vogt here overlooks my note at p. 475 (p. 65, separate copy), which shows that all the short-heads in this table are from secondary interments, that they are marked by letters and not figures, and are not included in the averages. I ought to have kept the secondary and primary skulls entirely apart, as in the present memoir.

barrows, yielding for the most part brachycephalic skulls, is, I think, proved by the observations made during the two past seasons on the *secondary interments* in the upper strata of several of them. In two or three instances, Mr. Cunnington and Sir R. C. Hoare met with skeletons within a foot or two of the summits of long barrows, which, from their extended position and the nature of the iron weapons found with them, were evidently Anglo-Saxon.\* Some of the secondary interments are, however, clearly ancient British, of the bronze age; and in two instances at least, deposits of burnt bones, in one case enclosed in a British cinerary urn, were found by Mr. Cunnington and Sir R. C. Hoare near the tops of long barrows.† In no case whatever has *urn-burial* been met with at the base of a long barrow.‡ More important for our present purpose has been my discovery in five instances near the summits of long barrows of skeletons which were unmistakeably of the ancient British period. These skeletons were shown to be British, and not Anglo-Saxon, by their crouched or contracted posture, and in three instances by being associated with pottery of the character and period of which there can be no doubt. One case is that of a food-vase accompanying skeletons, the skulls from which have a breadth-index varying from .81 to .87.§ In two other instances, viz., in the

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\* *Ancient Wilts*, i, 100 (Sherrington, *Comp. Arch.*, xv, 344, pl. xviii, xix); i, 87 (Bowls Barrow); i, 72 (Boreham). In the long barrow at Tilshead Lodge, reopened by me, I found, within a foot of the summit, a skeleton stretched at length, with the iron umbo and other mountings of a shield, on the breast, and the remains of a small brass-bound bucket of wood at the head,—all objects clearly Anglo-Saxon. The breadth-index of the skull (No. 232) is .76.

† *Ancient Wilts*, i, 90 (Tilshead, Old Ditch); i, 102 (Corton); comp. i, 66 (near Battlesbury).

‡ Imperfectly burnt bones have, in two or three instances, been found at the base of long barrows; though in one instance (Tilshead, Old Ditch, reopened by me), they accompanied, and did not merely replace, the interment of the entire skeleton. They were, perhaps, sacrificial, and the accompanying skeletons, in the other instance (Bratton Camp long barrow), may have been missed. See, also, Hoare, i, 83 (Knook).

§ See a woodcut of the vase, and lithographic plate of the very brachycephalic adult skull from the secondary interment in the long barrow of Winterbourne Stoke.—*Mem. Anthropol. Soc.*, i, 141, pl. II.

Wilsford ("170") and Figgheldean long barrows, the pottery consisted of beautiful "drinking cups" of the latest highly-decorated type, such as are found in the most modern circular tumuli. The skulls of the associated skeletons have a breadth-index of  $\cdot 84$  in the former, and  $\cdot 78$  in the latter instance. Altogether, there are in my collection eleven crania from the upper level of long barrows, which I attribute to the later British period, and which are certainly secondary. A majority of these, six of the whole number, differ wholly in their type from the skulls of the primary interments at the base of the long barrows, and are as brachycephalic as any of the skulls from the circular barrows ( $\cdot 80$ - $\cdot 87$ ): one is sub-brachycephalic ( $\cdot 78$ ), two are orthocephalic ( $\cdot 75$ - $\cdot 76$ ), and two sub-dolichocephalic ( $\cdot 71$ - $\cdot 73$ ). Not one is truly dolichocephalic. One of these skulls (No. 257), that of a girl, from the Wilsford long barrow, having a breadth-index of  $\cdot 71$ , belongs rather to the long, than to the round barrow type; but it is remarkable that no more of this elongate type were found among these secondary interments, if, as we may believe was the case, the long-headed people continued to survive among the round-heads.\*

The evidence derived from these secondary interments appears to me very important, if not altogether conclusive; and I, therefore, arrange the skulls, according to their breadth-index, as follows:—

SKULLS FROM SECONDARY INTERMENTS IN THE SIMPLE LONG BARROWS OF  
SOUTH WILTS.

			Nos.	Proportions.
I.	DOLICHOCEPHALI.	( — $\cdot 70$ )	...	...
	Sub-dolichocephali.	( $\cdot 71$ - $\cdot 73$ )	1	$\cdot 09$
II.	ORTHOCEPHALI.	( $\cdot 74$ - $\cdot 76$ )	2	$\cdot 18$
	Sub-brachycephali.	( $\cdot 77$ - $\cdot 79$ )	2	$\cdot 18$
III.	BRACHYCEPHALI.	( $\cdot 80$ - $\cdot 87$ )	6	$\cdot 55$
			<hr/> 11	<hr/> $1\cdot 00$

\* Signor de Rossi has lately described an ancient tomb near Rome, in which were skeletons with skulls of the long type in the lower, and of the round type in the upper, stratum.—"Découvertes d'Antiquités Préhistoriques dans la Campagne Romaine." *Revue Archéologique*, Juillet 1867, p. 52.



COMPARISON OF ANCIENT BRITISH DOLICHOCEPHALOUS AND BRACHY-  
CEPHALOUS SKULLS WITH THOSE OF OTHER PEOPLES.

To return from this digression, to the long-barrow skulls of the primary interments, the measurements of all of which are given, in the order of their breadth-index, in Table I.

The most important observation in regard to these skulls seems to be that, when compared with those of all peoples, they occupy a remarkable situation in respect of their low *breadth-index*. There is no people in Europe at the present day with skulls so dolichocephalous.\* Their place is, indeed, almost at the top of the scale of dolichocephaly and brachycephaly, and alongside that of the skulls of Negroes, Hindoos, and New Caledonians.† Our 67 long barrow skulls have, indeed, about the same average breadth-index as is found in 66 African Negroes and 15 Australians, measured by Welcker; and, if arranged according to the German professor's method (Taf. II, fig. 6), the resulting figure would be almost identical with that shown by him for the Negroes. The 27 more elongate and narrower skulls from the simple long barrows of South Wilts, if separated from their congeners of the chambered long barrows, occupy even a higher place on the scale, near the Hottentots and Caroline islanders or "Olias." These crania of primeval Britons are, indeed, among the most dolichocephalous known. They are remarkable, not merely for length but for narrowness, and come strictly within the definition of *stenoccephali*, to adopt the term introduced by Professor Lucae, and sanctioned by the use of Barnard Davis and Professor Welcker.‡

Dr. Davis has shown that the skulls of many Polynesians,

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\* Four of the more recently discovered long barrow skulls (Nos. 224, 233, 235, and 251) were exhibited at a meeting of the Anthropological Society of Paris, June 6, 1867. MM. Broca and Bertillon reported their measurements as yielding a mean breadth index of '664, and observe, "Il résulte que l'indice céphalique de ces crânes indique un degré de dolichocéphalie extraordinaire qui ne se trouve jamais chez les Européens."—*Bull. de la Soc. d'Anthrop.*, s. s. t. ii, p. 357; comp. p. 676.—Through the kindness of the Committee of the Paris Society, we are enabled to reproduce, from the *Bulletins*, woodcuts of three of these skulls.

† See Professor Welcker's very valuable tables, *Archiv für Anthrop.*, i, 135, 138, 154, 157, Tab. 1, II, VI, VII.

‡ *Anthrop. Review*, 1866, iv, 54; *Archiv für Anthrop.*, 1866, i, 152.

viz., the Melanesians of New Caledonia and of the New Hebrides, and also Caroline Islanders, are distinguished not only by great length and narrowness, but also by great proportionate height and by a ridge-like elevation of the vertex, in the line of the great longitudinal sutures. These characters, as Dr. Davis points out, are so marked as to justify our regarding these peoples as approximating in their skull-form to that of the synostotic scaphocephali; and, as he says, "they may with propriety be designated 'natural scaphocephali.'"<sup>\*</sup> This term, *natural scaphocephali*, appears to me to be almost equally applicable to a large proportion of our long-barrow skulls,<sup>†</sup> in which these characters, of length, narrowness and carinated vertex, are present in a remarkable degree. As regards elevation, though a great majority of the skulls of men are high skulls, they are not, as a rule, by any means so high as the Polynesian skulls here referred to. As Table I shows, their *height-index* exceeds their *breadth-index* by the figure 2 (A  $\cdot$ 70 to B  $\cdot$ 72);<sup>‡</sup> whereas in the 7 Caroline Islander skulls, measured by Professor Welcker, the excess is represented by the figure 6 (A  $\cdot$ 68 to B  $\cdot$ 74).<sup>§</sup> On the other hand, we learn from Professor Van der Hoeven, that one of these Caroline Islanders' crania (No.

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\* Barnard Davis, M.D., *On Synostotic Crania among Aboriginal Races*, 1865, p. 31; *Deformations of the Skull*; *Proceedings of Scandinavian Naturalists*, 1865, p. 5; *Anthrop. Review*, 1866, iv, 54; *Thesaurus Craniorum*, No. 817, p. 311.

† Already designated *Kumbecephali* by Prof. Dr. D. Wilson. *Prehistoric Annals of Scotland*, p. 166, 169, 180. Blumenbach had long ago written of "the narrow, and as it were, *keeled* head of the Ethiopian."

‡ In my former tables, I and II (*Mem. Anthrop. Soc.*, i), the height-index of the long-barrow skulls was shown to exceed this breadth-index by the figure 3 (A  $\cdot$ 70 and  $\cdot$ 71 to B  $\cdot$ 73 and  $\cdot$ 74). This is caused by the Yorkshire long-barrow skulls from Dinnington being included in those tables. The difference, on the large scale, is possibly more truly represented by 3, than by 2.

§ The six Isle of Pines (New Caledonian) skulls in the Museum of the College of Surgeons (5402 A.-F.), presented by Capt. Sir Everard Home, attracted my attention, several years since, by their long and narrow form; and I measured and took notes of them, at that time, for comparison with those from the long barrows. They have a mean breadth-index of  $\cdot$ 70<sup>0</sup>, and a height-index of  $\cdot$ 78. They are consequently much higher than our British *hypsisenocephali*, which, as a rule, are not typically such.



VII), has a height-index which only exceeds the breadth-index by 2 (A  $\cdot 72$  to B  $\cdot 74$ ). Again, in a few instances, the long barrow British skulls have a preponderance of the height-index which more than exceeds the average of the difference in the Caroline Islanders, and is represented by figures as high as 6, 7, 8, and 10. Altogether, notwithstanding the varieties in the relations of the two indices revealed by Table I, many of them seem to fall into the class of *hypsistenocephali*, the designation introduced by Dr. Barnard Davis for high narrow skulls, and which has received the sanction of Professor Welcker.\*

Professor Welcker, from an immense number of measurements, has ascertained that the average height-index of dolichocephalous skulls of all peoples is  $\cdot 74$ , and that of brachycephalous skulls  $\cdot 76$ .† It is interesting to observe that these figures nearly correspond with those which I obtain for our ancient British dolichocephali and brachycephali, and which are  $\cdot 73$  and  $\cdot 77$  respectively. But it does not hence follow that though the dolichocephali are absolutely lower, they are therefore truly low, and the brachycephali truly high skulls. On the contrary, Welcker shows very clearly that a skull is to be regarded as “*high* when the height-diameter, *flat* when the breadth-diameter, is next to the longitudinal diameter, the chief measure of the skull.” According to this view, it is height in its relation to the breadth, not absolute height, which determines the claim of any series of skulls to be regarded as high or as flat.‡

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\* See “Skull-heights in their relation to the breadth of skulls”, being section vi of Professor Welcker’s recent memoir, “Kraniologische Mittheilungen,” in the *Archiv für Anthropol.*, i, 152. Welcker considers that all skulls may be classed according to a quinary system, either as—1. high and narrow, *Hypsistenocephali*; 2. high and broad, *Hypsibrachycephali*; 3. middle high and middle broad, *Orthocephali*; 4. flat and narrow, *Platystenocephali*; and 5. flat and broad, *Platybrachycephali*: of these, he regards the first, middle, and last as typical; the two others as exceptional forms.

† Welcker, *loc. cit.*, p. 153.

‡ Hitherto, with Retzius, it has been customary to judge of the height of skulls according to the length-height index, and not according to the breadth-height index, as Welcker now suggests: “Chez les dolichocéphales la hauteur du crâne ordinairement base; . . . chez les brachycéphales la hauteur du crâne, comparée avec la longueur, considérable” (*Schriften*, 118, 121). I was myself in the habit of regarding platycephaly as complementary

To judge of this by the eye, skulls are to be viewed not so much in profile, as in the frontal and occipital aspects; and thus viewed, it is seen that typical dolichocephali are generally high skulls—*hypsicephali*; and typical brachycephali flat skulls—*platycephali*.

Our ancient British brachycephali of the round barrows clearly belong to this last-named category; and, according to the quinary scheme of anatomical classification propounded by Welcker, they must be classed as *platybrachycephali*. In them, the height-index falls short of the breadth-index in the proportion of  $\cdot 77$  for the former, and  $\cdot 81$  for the latter. (See Table II, Columns A and B.) These ancient British brachycephalous skulls are those of a people who have numerous congeners in modern Europe; among whom the South Germans, Slaves, Finns, and Swiss, especially the people of the Grisons, may be named. Not only is this relationship seen in their high breadth-index, but in the considerable preponderance of this over their height-index.

As regards the ancient British dolichocephali of the long barrows, the case is very different. It is not merely that we must note the absence of any modern European people whose skulls are on the average as long and as narrow, but that those peoples whose skulls are the longest and the narrowest, have not high but somewhat flat skulls. Welcker would, no doubt, class them among his "middle high and middle broad skulls, *Orthocephali* (often with a moderate minus of height);" and, no doubt, they differ generally in an important particular from skulls which, on the average, are higher than they are broad. According to Welcker's measurements, the skulls of the Irish, the most dolichocephalous of Europeans,

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of the dolichocephalie, and hypsi- or aereocephaly, as complementary of the brachycephalie forms (*Mem. Anthropol. Soc.*, i, 154). Welcker himself formerly said, "If we arrange skulls according to the increasing figure of the percentage of skull-breadth, they are, at the same time, arranged according to the increase of the figure of the percentage of skull-height" (*Wachsthum und Bau*, 1862, p. 63). But though this is, indeed, the fact, he now shows clearly, when the relation between the two are considered, "that generally for dolichocephaly greater height, and for brachycephaly greater flatness of the skull is to be regarded as the typical relation" (*Archiv für Anthropol.*, i, p. 160.

have a breadth-index of  $\cdot 73$  and a height-index of only  $\cdot 70$ . The Swedes, Dutch, Scotch, English and Danes are less dolichocephalous than the Irish, with the breadth-index of their skulls varying from  $\cdot 75$  to  $\cdot 76$ ; whilst the height-index does not rise higher than from  $\cdot 70$  to  $\cdot 73$ , in all showing a decided, though not considerable, minus.\* The 79 Spanish Basque skulls, at Paris, present very similar relations; having, according to my measurements, a mean breadth-index of  $\cdot 76$ , and a height-index of  $\cdot 74$  for those of men; and  $\cdot 76$  and  $\cdot 73$  for women.†

There are certain skulls of perhaps varying antiquity, which have been exhumed in different parts of Europe, with which the long-barrow skulls seem to have more in common than with the skulls of any modern European people. Such are the *grave-row (cemetery) skulls* of Professor Ecker (breadth-index of 18,  $\cdot 71^3$ ); the *Hohberg skulls* of His and Rutimeyer (breadth-index of 13,  $\cdot 70^7$ ), the so-called *Apostle skulls* of C. Vogt; and some of the *river-bed skulls* of our own Huxley. As regards these last, some are likely enough to be skulls of the same people as those from the long barrows; but we can scarcely generalise from instances so open to fallacy, as is, for the most part, the *provenance* of skulls from the beds of rivers. The Swiss and German ancient dolichocephali above referred to seem to belong to a post-Roman period and to the *iron age*, and are, as may be thought, Northern Teutonic. Professor Ecker's *grave-mound* ("Hügel-gräber") skulls, as well as his *grave-row* ("Reihen-gräber") skulls, belong, I believe, to the *iron age*. They are sub-brachycephalic, with a breadth-index of  $\cdot 78\text{--}\cdot 87$  (*Crania Germaniæ*, p. 79). Having seen many of the collections of Germany and Switzerland, I can state that we have, as yet, few or no authentic skulls from the oldest tombs of those countries ("Hunnen-gräber," etc.), which have any claim to be attributed to the *stone age*, and which are so much to be desired on many grounds, as well as for comparison with the English long-barrow skulls.

As we have no typical dolichocephali in Europe at the present day, we must search for cranial proportions similar to those

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\* Welcker, *loc. cit.*, p. 154, Tab. VI.

† See Table III. The Basque skulls are considered more fully in the next section.

of our long-barrow folk far away in Africa, India, Australia, the Melanesian Islands, and among the Esquimaux. In the following comparison, most of the measurements are taken from the tables in Professor Weleker's late memoir; they are all in millimetres:—

	No. of Skulls.	Measurements.			Index.	
		L.	B.	H.	B.	II.
Ancient British Long Barrow Skulls of Males	48	195	... 139	... 143	·71	... ·73
Caroline Islanders (Olias)	7	187	... 128	... 139	·68	... ·74
New Caledonians ..	2	—	... —	... —	·69	... ·76
„ (Isle of Pines*)	6	182	... 128	... 142	·70	... ·78
Australians - - -	15	180	... 126	... 135	·70	... ·75
Kaffirs - - -	20	—	... —	... —	·69	... ·74
Negroes - - -	66	181	... 126	... 132	·70	... ·73
Hindoos - - -	18	—	... —	... —	·70	... ·75
Esquimaux - - -	18	186	... 131	... 138	·70	... ·74

The following is a similar comparison for the round-barrow skulls:—

	No. of Skulls	Measurements.			Index.	
		L.	B.	H.	B.	II.
Ancient British Round Barrow Skulls of Males	56	185	... 149	... 142	·81	... ·77
Czechs - - -	27	177	... 145	... 134	·82	... ·76
Slovaks - - -	6	176	... 143	... 134	·81	... ·76
South Germans - -	80	182	... 146	... 134	·80	... ·74
Finns - - -	11	179	... 141	... 134	·79	... ·75

It is remarkable, as regards these ancient British skulls, both dolichocephali and brachycephali, that though the relation of the breadth-index and the height-index corresponds very much with that in certain modern peoples (the former with uncivilised and the latter with civilised), yet the actual measurements are so much in favour of these early inhabitants of Britain. The cranial capacity, and consequently the brain-weight, of both peoples has been very decidedly high.

Although the long-barrow skulls are for the most part high (hypsicephalous), yet in a certain proportion, or one-sixth of

\* The six New Caledonian skulls from the Isle of Pines, are those in the College of Surgeons' Museum, referred to in a former note; the measurements of which are my own.



those of men (8 out of 48), the height-index falls short of the breadth-index. The tendency to platycephaly is both much more frequent and much more marked in the skulls regarded as female; and in more than one-third (7 out of the 19), this relation is observed. Indeed, the average breadth-index and height-index is represented by the same figure,  $\cdot 71$ ; so that the female skulls cannot be called hypsicephalic at all, but are orthocephalic. Such exceptions to general rules, as regards the relative proportions of breadth and height-index, probably occur among the skulls of all peoples. If we may trust the late Professor Vrolik's measurements, opposed as they are in this instance to those of Professor V. der Hoeven, one of the female Olia or Caroline Islander skulls (that of *Natioli*) differs from all the rest in being platycephalic, and has a height-index of only  $\cdot 72$ , as opposed to a breadth-index of  $\cdot 73$ . One skull (No. 15♀, Table I) from Tilshead East, engraved and fully described in my former paper,\* has the height-index as low as  $\cdot 65$ ; and has been adduced by Professor Ecker as particularly illustrative of the flattening of the vertex shown by him to be characteristic of many female skulls.† Another female skull, also very remarkable for its flat vertex (H-I.  $\cdot 68$ , No. 3♀, Table I.), from Tilshead, Old Ditch, has since been added to the series in my collection. It is represented in Fig. I. of the woodcuts. Such skulls range themselves as to their form, with those of Hottentots and Bosjesmen,‡ and are *Platystenocephali*.

Among the brachycephalous skulls from the round barrows, the general rule of the height-index being represented by a minus figure as compared with the breadth-index, meets with very few exceptions. No more than 7 of the 56 male skulls, and not one of the 14 female skulls deviate from this rule; though the two most dolichocephalous of the male series have the height-index so high (B-I.  $\cdot 74$ , H-I.  $\cdot 80$ ), as to be hypsicephalic. The observation as to the exceptional forms of individual examples in these two classes of ancient British skulls, is seen to

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\* *Mem. Anthropol. Soc.*, i, 148, Pl. III.

† *Archiv für Anthropol.*, i, 86.

‡ The Bosjesman skull, No 5357, ♀, in the Royal College of Surgeons' Museum, has, I find, a breadth-index of  $\cdot 76$ , and a height-index of  $\cdot 72$ .

accord with Welcker's remark on the skull-forms of different peoples, that "there are, although isolated, even flat dolichocephali and high brachycephali;" and likewise that "the greatest deviations of the height-index are found in the middle of the scale, in the orthocephali" (B 73-77).\*

COMPARISON OF ANCIENT BRITISH DOLICHOCEPHALOUS SKULLS WITH  
THOSE OF MODERN BASQUES.

The sixty Spanish Basque skulls, from the province of Guipuscoa, in the Collection of the Anthropological Society of Paris, were, in my former paper, compared with the long-barrow skulls.† After that memoir was written, viz. in the summer of 1864, I had the opportunity of again examining them, and on that occasion took the principal measurements of all of them. As M. Broca has only given us a summary, though a most valuable one, of the results obtained by him, it appears desirable to print my detailed measurements of these Basque skulls, which I have therefore arranged, according to their probable sex, and in the ascending order of their breadth-index, in Table III. I have not excluded the three skulls of children, that not having been done by M. Broca, and as it is obvious that their retention will not appreciably affect the averages. The internal capacity given for each skull, is that obtained by M. Broca, and inscribed by him in cubic centimetres, on each cranium. M. Broca gives  $\cdot77^5$  as the average breadth-index of the entire series, whilst I make it no more than  $\cdot76$ . I was informed, when in Paris, that these skulls when exhumed, were for security deposited, for several hours, in a tank of water. It is hence probable that they were still somewhat damp, when measured by M. Broca, shortly after their arrival in Paris; and that they were thoroughly dry when submitted to my callipers, nearly two years later. When skulls

\* *Archiv für Anthropol.*, i, 155. Prof. Welcker shows the reason of this apparent irregularity, when he observes that it is "in this region the two opposite forms, typical dolichocephali, with their broader extreme instances, consequently hypsiccephali (in our Table I), and typical brachycephali, with their narrower offshoots, thus platycephali (in our Table II), radiate and mix with each other" (as to form).

† *Mem. Anthropol. Soc.*, vol. i, p. 130, 160; separate copies, p. 11, 41.

are wet, they have a greater breadth-index than when dry; for, as Professor Welcker has shown, "The recent skull in drying, changes its form a little in a dolichocephalic direction."\*

In the year 1866, a second series of Spanish Basque skulls, nineteen in number, from the same Guipuscoan cemetery, was added to the collection in Paris; of which skulls, through the kindness of M. Broca, I was likewise enabled, in the summer of 1867, to take the chief measurements. I have added these measurements to the Table; but, as two skulls only (Nos. 1 and 7), seem to be those of women, I have not separated them according to the sexes. My measurements agree as closely with the average results of M. Broca, as those by two manipulators can be expected to do. The breadth-index for this series, according to both, is  $\cdot 76$ . This conformity gives me confidence, as regards the other series of sixty skulls, that my measurements are likewise correct, and that the discrepancy which has been pointed out is to be attributed to the different hygrometric condition of the crania at the time of the two sets of measurements being taken.

Taking the whole of these Basque crania, their mean breadth-index of  $\cdot 76$  is one equally removed from that of typical dolichocephalic and brachycephalic skull-forms; of the former of which our long barrow skulls are an excellent instance, as the round barrow skulls are of the latter. For the former, as we have seen, the mean breadth-index is  $\cdot 71$ ; for the latter,  $\cdot 81$ . The preponderating ovoid or orthocephalic type of the Basque skulls is perhaps still better brought out, on distributing them, according to the convenient quinary classification previously adopted, as follows:—

Spanish Basque Skulls.		Male.		Female.		Both Sexes.	
		Nos.	Proportions.	Nos.	Proportions.	Nos.	Proportions.
I.	DOLICHOCEPHALI.	( — $\cdot 70$ )	...	...	...	...	...
	Subdolichocephali.	( $\cdot 71$ — $\cdot 73$ )	6 ... 10.5	5 ... 22.8	11	13.8	
II.	ORTHOCEPHALI.	( $\cdot 74$ — $\cdot 76$ )	24 ... 42.1	9 ... 40.9	33	41.8	
	Subbrachycephali.	( $\cdot 77$ — $\cdot 79$ )	23 ... 40.4	7 ... 31.8	30	38.	
III.	BRACHYCEPHALI.	( $\cdot 80$ — $\cdot 83$ )	4 ... 7.	1 ... 4.5	5	6.4	
		57	100.	22	100.	79	100.

\* *Wachsthum und Bau*, p. 139.

+ *Bull. de la Soc. d'Anthrop.*, second series, t. i, p. 470; t. ii, p. 10.30.

This table should be compared with that at page 10, for the round-barrow skulls, and that at page 16, for the long-barrow ones. An examination of the three shows how remarkably they differ; the long and round-barrow skulls crowding around the high and the low figures respectively, while the Basques gravitate almost entirely to the intermediate and central figures. But, though not typically dolichocephalic, the Basque crania, as compared with those of Europe generally, and especially with those of France, are relatively dolichocephalic; and nothing is more striking than the very small proportion of brachycephalous skulls which are found in the series. According to the high authority of Professor Virchow, two at least of the brachycephalous skulls of the series owe their brachycephaly to synostosis of the transverse sutures.\* They are probably the skulls of a decidedly mixed, though originally dolichocephalic, people; the original type having been modified by a moderate brachycephalous infusion, continued through many generations.

It has already been shown from my measurements, (*ante* p. 23), that, as in other modern Europeans, the mean vertical diameter of these Basque skulls falls decidedly below the transverse. The reverse, as I have shown, is the case in the long-barrow dolichocephali.\*

I still adhere to the opinion that the tendency to a dolicephalous type in the Basques is derived from the ancient Iberians; and that the brachycephalous admixture is Gaulish. More evidence as to this, it is to be hoped, may be derived from

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\* "Two of the Basque skulls belonging to the Anthropological Society of Paris, have been described as unusually brachycephalic; but it will be found that they both exhibit a premature ossification of the transverse sutures. 'The Basque skull is eminently dolichocephalic, and in this respect it resembles the ancient crania which are found in the oldest tumuli of North-eastern Germany.'—Prof. Virchow, at 'The Anthropological Congress of Paris of 1867,' *Med. Times and Gazette*, 7th March, 1868.

† M. Broca's vertical diameter is a *basilo-bregmatic* one, and differs entirely from that generally employed by cranioscopists. My "greatest-height" is taken, as usual, between the plain of the *foramen magnum* and the bregma, or vertex, of the skull, a little behind the point of junction between the sagittal and coronal sutures.



researches conducted by the members of the Anthropological Society of Madrid; from whom no contributions would be more acceptable than such as might clearly reveal to us the ancient and modern cranial typos, for different parts of the Iberian Peninsula.

Our views as to the Spanish Basque skulls, derive much support from all I have yet been able to learn, respecting the series of 57 French Basque skulls, from St. Jean-de Luz, added during the past autumn, 1867, to the collection of the Anthropological Society of Paris, through the enterprise of M. Broca. These crania, it is stated, show a very much greater tendency to the brachycephalous type, than do those of the Spanish Basques. This, if the views here advocated be correct, was to have been expected in the descendants of an Iberian people, settled in a Transpyrenean country, in the midst of, and surrounded by, Gaulish tribes.†

#### DIFFERENT CHARACTERS OF THE FACE IN THE ANCIENT BRITISH DOLICHOCEPHALI AND BRACHYCEPHALI.

It is unnecessary to repeat here, what I have before said as to the contrasted characters of the face, in the two classes of ancient British skulls.\* I must, however, point out, that though in our dolichocephali of the long barrows the cranium proper corresponds so much in form with that of the Negroes, and Melanesian Islanders, the face-cranium is remarkably and altogether different, and so proves the absence of any genetic relationship. There is in particular none of the prognathism, exaggerated malar breadth, or great width of the nasal openings, which give an air of savageness and ferocity to the skulls of the New Caledonians and Caroline Islanders; but the very reverse of all these. They are, indeed, more orthognathic even than many modern Europeans, and the facial characters generally are mild, and without exaggerated development in any one direction. The contrary is the case in the brachycephalous skulls from the round barrows, to which the very large and prominent facial bones give a claim to be regarded

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\* *Mem. Anthropol. Soc.*, i, 150-154.

† Since the above was written, an elaborate description of these French Basque skulls has been given by M. Broca.—*Bull. de la Soc. d'Anthropol.*, s. s. t. iii, p. 43-101.

as more or less prognathic, and preeminently macrognathic. The face in the dolichocephalic races of Europe is defined, by M. Pruner Bey, as *oval*, and in the brachycephalic, as *angular* or *lozenge-shaped*. These definitions may be accepted as also applicable to our ancient British long-heads and round-heads; though they scarcely succeed in expressing the more striking facial characteristics of these crania.

#### PREMATURE OBLITERATION OF THE SUTURES IN THE ANCIENT BRITISH DOLICHOCEPHALIC SKULLS.

The great tendency to obliteration of the sutures, before observed in the long barrow skulls,† is fully confirmed by observation on the additional examples obtained in the excavations of the two past years. The sutures are seen to be obliterated disproportionately to the apparent age, as judged of by the degree of dental attrition and other circumstances. The sagittal suture especially is often effaced, sometimes, as would appear, by *infantile*, at others by *premature senile*, obliteration. At times, the sagittal suture is almost entirely obliterated, whilst the coronal and lambdoid are open; but, in an equal number of instances, the sagittal, coronal, and lambdoid are all equally effaced. The dolichocephaly, therefore, of these skulls cannot be regarded as the effect of synostosis; but, on the contrary, the dolichocephaly and tendency to synostosis of the parietals are both race-characters; and the latter is more probably an effect of dolichocephaly than its cause. As I have previously shown, "it is not improbable that in dolichocephalous peoples the great longitudinal sagittal suture (in the same way, though in a much less degree than the frontal), may be more prone to obliteration than the transverse sutures, in consequence of the suture margins being more early brought into apposition, from the growth of the brain being more active in the longitudinal direction than in the transverse."\*

Not only have no facts adverse to this view been brought to

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\* *Mem. Anthropol. Soc.*, i, 154-155. "On Synostosis of the Cranial Bones, especially the Parietals, in one class of Ancient British and African Skulls."

—*Natural History Review*, No. 18, 1865, p. 242.

† *Nat. Hist. Rev.*, t. c., p. 246 (separate copies, p. 5).

light, but one recently acquired skull is particularly valuable, as affording strong additional proof of its accuracy. It is that of a young woman, of perhaps eighteen years of age, and was obtained from the long barrow of Norton Bavant. The sphenobasilar symphysis is still open. The skull (No. 251 of my Collection), is of markedly sub-scaphecephalic form, and presents likewise a slight grade of *klincephaly*. The breadth-index is not more than  $\cdot 64$ , and it is, with one exception, the narrowest or most dolichocephalic skull I have yet obtained from the long barrows. It is not possible, in this instance, for any one to attribute the dolichocephaly to synostosis. *Every suture, longitudinal as well as transverse, is seen to be open, both on the inner and outer surface of the skull.* In regard to the question before us, this cranium constitutes a crucial instance, entirely opposed to the view of the dolichocephaly of these skulls being caused by synostosis. Had the individual lived to the period of middle age, it is very possible, nay probable, that premature senile obliteration of the sutures might have taken place; but if so, it is clear that this would have been an effect of dolichocephaly, and in no degree whatever its cause. It is just such immature skulls as that before us, and as that previously referred to from the chambered long barrow at Uley,\* which are so extremely valuable, as enabling us to form a just estimate of the probable influence of synostosis in modifying the form of the skull.

#### DIFFERENCE OF STATURE IN THE ANCIENT BRITISH DOLICHOCEPHALI AND BRACHYCEPHALI.

In the former paper,† I deduced the stature of the two peoples whose cranial remains have now been compared, from ten femora of men from long barrows, and from ten others from round barrows; and I there showed that the probable mean

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\* *Ibid.*, p. 263 (p. 24). The skull, No. 251, described in the text, and a wood-cut of which is also given (see fig. 3), though much more dolichocephalic, is very similar, in form and proportions, to the remarkable cranium, perhaps of a New Caledonian, described and figured by Professor Huxley, and in which, with a breadth-index of  $\cdot 73$  (" $\cdot 729$ "), the sagittal and other sutures are distinctly open. See *Journal of Physiology*, vol. i, p. 60, Nov. 1866.

† *Mem. Anthropol. Soc.*, i, 159.

height, as calculated from the length of the thigh bones, was 5 feet 5 inches for the dolichocephalous Britons of the stone age; and 5 feet 9 inches for the brachycephalous Britons of the bronze age; being a difference of no less than 4 inches, or 10·16 centimetres. Since that time, I have collected many additional observations of the length of the thigh bones from primary interments in long barrows. I have now altogether twenty-five measurements, all taken by myself, representing an equal number of separate male skeletons, fourteen being from the chambered, and eleven from the simple or unchambered, barrows.\* In Tables I and II of *Crania Britannica*,† there are twenty-seven measurements of thigh bones from the round barrows, twelve being of skeletons, the skulls of which are engraved and described in that work. Of these twelve, five were measured by myself, and seven by Dr. J. Barnard Davis. The other fifteen measurements are of femora, from the round barrows of Derbyshire and Staffordshire, still preserved in the Bateman Collection, and were taken either by Mr. Bateman or by Dr. Davis. On calculating the mean length of the twenty-five femora from the long barrows, I find this to be exactly 18 inches, or 45·7 centimetres,‡ and that of the twenty-seven femora from the round barrows to be 18·8 inches, or 47·75 centimetres.‡

If, with these data, we accept Professor Humphry's probable estimate, that the average length of the thigh bone is as 27·5 to the statura represented by 100, we shall find that the mean statura of the dolichocephalic men of the long barrows was

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\* The fourteen femora, from the chambered long barrows of Gloucestershire and North Wilts, average 17·9, the eleven from the simple long barrows of South Wilts, 18·2 inches; the difference being no more than 0·3 inch, or 7·4 millimetres. Nothing can be inferred from so slight a discrepancy.

† *Crania Britannica*, p. 240-245.

‡ The twelve femora, from the round barrows of England, measurements of which are given, *Cran. Brit.*, Table I, have an average length of 19·13 in.; and the fifteen, from the round barrows of Derbyshire and Staffordshire, in *Cran. Brit.*, Table II, an average of 18·56 inches, or more than half an inch (·57 in.) less. The first series may be regarded as consisting of picked instances, and may have included the remains of a greater number of chieftains remarkable for their stature.



5 feet 5·4 inches, or 1.661 metre, and that of the brachycephalous men of the round barrows 5 feet 8·4 inches, or 1·737 metre. The excess of stature, in favour of the brachycephalous Britons, is thus found to amount to 3 inches, or 7·6 centimetres. The difference is not quite so great as that formerly deduced from more limited data, but is amply sufficient to support the inference of a difference of race being implied by so considerable a difference in stature.

#### ANCHYLOSIS OF CERVICAL AND DORSAL VERTEBRÆ IN ANCIENT BRITISH DOLICHOCEPHALI.

A peculiarity, which I have frequently noticed in the human remains from the long barrows, may be briefly referred to. This consists in an anchylosed condition of two or more of the cervical, or upper dorsal, vertebræ. "Two dorsal vertebræ, feebly united by anchylosis," were obtained from the chambered long barrow at Uley, and are preserved in the Museum at Guy's Hospital;\* and when this tumulus was re-opened in 1854, I found, in searching among the debris of human remains, in the chambers, two other upper dorsal vertebræ united in the same way. The same condition was observed in the remains sent to me from the neighbouring chambered tumulus at Nympsfield; and in those likewise from Charlton Abbots; in the last of which, two of the lower cervical vertebræ were found anchylosed. Again, when the Rodmarton chambered barrow was opened, three, if not four, cervical vertebræ, firmly soldered together into one piece, were picked out of the remains. I have found the same thing in the unchambered long barrows of South Wilts; and have one remarkable specimen from that at Fyfield, in which the *vertebra dentata* and the third vertebra of the neck are fused together into a single bone.†

I would not assert that this morbid condition is confined to remains from the long barrows. It is, however, certainly not of rare occurrence; whilst it is very uncommon and almost unknown, so far as my experience extends, in the round barrows. It hence seems to be indicative of some peculiarity in

\* Catalogue, No. 3202.

† *Cran. Brit.*, Pl. 5, xxiv, p. 3. Pl. 59, xxvii, p. 3. *Mem. Anthropol. Soc.*, i, 476.

the mode of life of the people in whose remains it is observed. That many of the peoples of Northern Europe were at one time partially *troglydytic*, and occupied subterranean cave-dwellings, at least during the winter, we have abundant testimony. Diodorus tells us that the Britons had subterranean repositories for their corn.\* Tacitus says the same of the ancient Germans; and adds that they took up their abode in them during the cold of winter:† the same may have been true of the Britons. It is certain that if the entrances to these dwellings of the living were as narrow and contracted as in those which remain to us of the dead, they could only have been entered on all-fours, and that not without risk of injury. Of the subterranean dwellings and granaries of some of the British tribes, we have the probable remains in the *weems* and *Picts-houses* of Scotland, and in more or less analogous structures found both in Cornwall and Ireland. The entrances to the Scotch weems and earth houses is generally by a long passage, which is often less than two feet wide and three feet high.‡ It is clear that in the entrance to, and exit from, dwellings thus constructed, the head and neck would be very much exposed to violent concussions against the sides and roofs of these narrow passages and doorways; and it is not, perhaps, improbable that ankylosis of the vertebræ may have resulted from such violence. It would be desirable to ascertain whether our mining population, whose labours are carried on in low, narrow, and dark galleries and chambers, are not liable to injuries of the neck, resulting in vertebral ankylosis such as that of these ancient Britons.

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\* Diod. Sic., v, 21.

† Tacitus, *Germania*, 16, "Subterranei specus, suffugium hiemi." See, also, what Virgil says of other northern nations, *Georgic*. iii, 376. The historical notices of subterranean dwellings in Britain and in the rest of Europe, of necessity refer to the *bronze*, if not even to the *iron*, period. The discoveries, however, in the cave-dwellings of central France, and the comparison of the probable habits of the people by whom they were inhabited, with those of the Esquimaux, show that such dwellings and such a mode of life were, in all likelihood, much more common in the *stone* period than in the succeeding ones.

‡ *Archæologia*, xxxiv, 127.

## SUMMARY OF INFERENCES.

It will be convenient to conclude this paper with a summary, in which may be arranged the principal inferences and conclusions to be deduced from it, and from my preceding memoir, under fourteen different heads.

I. The skulls from the primary interments in the *long barrows* of Wiltshire and Gloucestershire, and, it is believed, of South Britain in general, are of a strongly-marked dolichocephalic type, having a mean breadth-index of  $\cdot 71$ ; which is much lower than that of any modern European people. No brachycephalic skull, with a breadth-index of  $\cdot 80$ , or upwards, has been obtained from the primary interments in these barrows. No objects of metal or of decorated pottery are known to have been found with these interments, but only those of stone, bone, or horn. We refer, therefore, these long barrows to the *stone period*.

II. The skulls from the primary interments in the *round barrows* of the same districts, and, it is believed, of South Britain in general, are of more or less brachycephalous proportions, having a mean breadth-index of  $\cdot 81$ ; much higher than that now found in the population of any part of England and Wales.\* Objects of bronze, and, very rarely of iron, and richly-decorated pottery are found in them, with or without objects of stone. These round barrows, therefore, we refer to the *bronze period*, and to that of *bronze and iron transition*.

III. The skulls from secondary interments in the upper strata of the long barrows are, in most cases, of similar brachycephalous proportions with those from the primary interments in the round barrows. They have, in a few instances, been found in connection with decorated British pottery, altogether identical with that of the round barrows. They are doubtless the remains of the same people as that by whom the circular barrows were erected; and for all intents and purposes they may be regarded as round-barrow skulls.

IV. It has never been pretended that there is any necessary

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\* See table by Dr. Beddoe, *Mem. Anthropol. Soc.*, ii, 350.

connection between long skulls and long barrows, or round skulls and round barrows; and the dolichocephalic people, who, in this part of England, buried in long barrows, may elsewhere have erected circular tumuli over their dead. The important question does not regard the form of their tombs, so much as the sequence of the two peoples in the order of time and civilization. As to this, it is contended that the long-heads were the true primeval race; and that they were succeeded by a taller, more powerful, and more civilized people, who gradually extended themselves and became dominant, through a great part, perhaps nearly the whole, of the island.

V. These British dolichocephalic, or long-heads, are the earliest people whose sepulchral monuments can be shown to remain to us. The exploration of their tombs—the long barrows—shows that they buried their dead entire, and almost always without cremation; that they possessed herds of small, short-horned oxen, the *Bos longifrons* or *Bos brachyceros*, and that they subsisted largely on the chase of the red deer, and wild boar; that some of their customs were barbarous in the extreme; and in particular that, if not addicted to anthropophagism, they, at least, sacrificed many human victims, whose cleft skulls and half-charred bones are found in their tombs.

VI. The brachycephalous people, or round-heads, who buried in the round barrows, were more civilized than the dolichocephalic, and may be inferred to have brought with them the more common use, if not the first knowledge, of bronze. The exploration of their tombs shows that burning the dead was with them the prevailing and fashionable, though not exclusive, mode of burial; and the appearances are consistent with what we are told of the funerals of the Gauls (their supposed congeners) by Cæsar and Pomponius Mela. From the same source, or the appearances in their tombs, we should infer that they had advanced from the nomadic, pastoral, and hunting condition, to a more settled agricultural stage of culture; and that, if they had not altogether abandoned the more barbarous customs of their ancestors, and in particular that of human sacrifice (which all history tells us was, at one time, everywhere prevalent), they had, at least, restricted them within narrow limits.



VII. There is no proof, nor is it in the least probable, that the brachycephalic extirpated the earlier dolichocephalic people. It is far more likely that they reduced them to slavery, or drove them, in part, into the interior and western parts of the island. When once subdued to obedience, they may have lived with them on friendly terms, and even mingled with them in domestic relations. In some districts, the brachycephali would probably entirely replace the earlier race; whilst in others, the dolichocephali would live on under the supremacy of their more powerful neighbours. A mingling of the remains of the two peoples in their later tombs must almost certainly have ensued.

VIII. The two races, the existence of which is made known to us by researches in the tumuli, are most naturally identified with the two peoples, strongly contrasted in their manners, whom Cæsar describes in well known passages of the 12th and 14th chapters of the 5th book of his Commentaries.\* According to this, the short or round-heads of the bronze period are the same as the agricultural people of the maritime districts, who are said by Cæsar to have migrated from Belgic Gaul; and the long-headed people of the stone period are the pastoral and less-civilized people of the interior, reputed aboriginal, and who, prior to the coming of the others—as to which event there is no certain note of time—must have occupied, and been dominant in, the maritime parts, as well as in the interior of the island.

IX. The origin and ethnic affinities of these two peoples can only be discussed conjecturally and tentatively in the present state of science. An often-quoted passage in the *Agricola* of Tacitus, seems, however, to indicate part of the probable solution.† The great Roman historian points out, first, the dark complexion and curly hair of the western tribe of the Silures; and secondly, the similarity of the appearance of the

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\* Quoted *antea*, p. 43, *note*.

† Tacitus, *Agric.*, xi. "Silurum colorati vultus, torti plerumque erines [Jornandes adds 'et nigri'], et posita contra Hispania. Iberos veteres trajecisse casque sedes occupasse, fidem faciunt. Proximi Gallis et similes sunt \* \* \* In universum tamen æstimanti Gallos vicinum solum occupasse credibile est."

Southern Britons to their neighbours in Gaul. And he adduces the very obvious argument from these differences of physiognomy and appearance, that the Silures were descended from the Iberians of Spain, whilst the Southern and South-eastern Britons were derived from the people of the opposite coast of Gaul. As evidence of this last position, Tacitus refers to the similarity of the religion, language, and moral and mental temperament of the Britons and Gauls. It is not improbable that in this passage the Silures are named *κατ' ἐξοχῆν*, as a principal tribe, and as representative of others not, like themselves, confined to the extreme west of the island. By Cæsar, however, who knew nothing of the west of Britain, the Silures would be regarded as *interiores*, just as the regions producing tin were, and termed by him *mediterranei*. The *proximi Gallis* of Tacitus are clearly the same people as those of the *maritima pars* of Cæsar.

X. The geographer, Strabo, is another important witness for a great difference in the features and personal characteristics of the Iberians and Gauls. In the course of his fourth book, he twice tells us that the Iberians differed entirely in their bodily conformation from the Gauls, of both “Celtica” and “Belgica,” who, he expressly says, participated in the common Gaulish physiognomy.\* It is evident that, if we interpret this observation of Strabo’s by the light of that just quoted from Tacitus, we must picture the Iberians as a swarthy or *melanous* people, with dark complexion and curly dark hair. They would thus be strongly contrasted with the Gauls, who, by the classical writers, are uniformly represented as fair, or *xanthous*, and, moreover, as of tall stature. Compared with the Gauls, the Iberians, like other southern Europeans, were probably a people of short stature. We derive no light from the remains in the barrows as to the colour of the hair and the complexion of those buried in them; but they do enable us to ascertain a difference of height. The measurement of the skeletons, and especially of the thigh-bones, from the long barrows and the round barrows respectively, clearly demonstrate

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\* Strabo, iv, 1, § i; iv, 2, § i.

that the dolichocephali of the former, as compared with the brachycephali of the latter, were a people of short stature. The mean height, as calculated from the measurement of 52 male skeletons or femora, was about five feet six inches in the one, and five feet nine inches in the other; the average difference being no less than three inches.

XI. The cranial type of the ancient Iberians has not yet been so conclusively ascertained as is to be desired. But the examination of the large series of skulls of modern Spanish Basques at Paris, as well as of such Spanish and Portuguese skulls as exist in English and Dutch collections, altogether justifies the presumption that the Iberians of antiquity were a decidedly dolichocephalous people.

XII. The British brachycephali of the bronze period are to be regarded as an offshoot, through the Belgic Gauls, from the great brachycephalous stock of Central and North-eastern Europe and Asia; in all the countries of which—France, Switzerland, South Germany, Bohemia, Poland, Russia, and Finland—the broad and short cranial type is still the prevailing one.

The earlier British dolichocephali of the stone period were, we think, either derived from the ancient Iberians, or from a common source with that people. Not only was Spain peopled by the Iberian race, but even, in historical times, a considerable part of Gaul; and there is no improbability in the conclusion of its having occupied the British Islands likewise.

XIII. As to the origin of the Iberians themselves, it is better to confess our ignorance than to indulge in premature speculations. Some, as Professor Vogt, would bring them from America by way of a lost Atlantis, or “connecting land between Florida and our own continent, which, in the middle tertiary (miocene) period, was still above the water.” Others, as M. Broca, search for them in Northern Africa; others, in the more or less far East; whilst Professor Huxley finds in their crania, as in those of the other dolichocephali of Western Europe, Australian affinities, though without deciding on “the ethnological value of the osteological resemblance.”

XIV. In conclusion,—I am content with having established, from archaeological and osteological data, at least to my own sa-

tisfaction, the existence, in this Island of the West, of two distinct races in pre-Roman times. One of these, I may repeat, which had lost its supremacy, at least in the south of the island, being the earlier and dolichocephalic, was probably Iberic; the other, being the later and brachycephalic, was probably Gaulish or, in other words, Belgic.

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